

What is claimed is:

- 26  
1. An electric machine with a multi- pole rotor comprising:
- ferromagnetic poles separated from each other by radially oriented slots, wherein the width of said slots changes stepwise in tangential direction; and
  - a plurality of permanent magnets per pole, wherein said magnets are placed into said radial slots between adjacent poles in such a manner that the total width of magnets in a given radial slot varies from the bottom to the top of the slot.
- 27  
2. A rotor, as set forth in claim 1, wherein said permanent magnets have rectangular shapes.
- 28  
3. A rotor, as set forth in claim 1, wherein said permanent magnets are predominantly tangentially magnetized.
- 29  
4. An electric machine with a multi- pole rotor comprising:
- ferromagnetic poles separated from each other by radially oriented slots, wherein said slots are trapezoidally shaped; and
  - a plurality of trapezoidally shaped permanent magnet in each said slot.
- 30  
5. An electric machine with a multi- pole rotor comprising:
- ferromagnetic poles separated from each other by radially oriented slots, wherein said slots are trapezoidally shaped,
  - a plurality of trapezoidally shaped permanent magnets in each said slot, and
  - a plurality of non- magnetic wedges per each said rotor pole.
- 31  
6. A synchronous machine with a rotor comprising:
- a plurality of iron core segments per pole;
  - a plurality of permanent magnets per pole;
  - an optional squirrel cage; and

a' *comedy*  
9 - a stator with two or more separate windings, or a winding capable to generate more  
10 than one polarity of the air gap field, such as Dahlander pole- changing winding, a pole-  
11  
12 amplitude modulated winding, a pole- phase modulated winding etc.  
13

*32*  
1 *33* A rotor, as set forth in claim *31* 6, wherein said permanent magnets have rectangular shapes.

1 *34* 8. A rotor, as set forth in claim *31* 6, wherein said permanent magnets have trapezoidal shapes.

1 9. An electric machine with a multi pole rotor comprising:  
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- 3 - a plurality of tangentially magnetized permanent magnets;  
4  
5 - a plurality of radially magnetized permanent magnets, and  
6  
7 - a plurality of coils.